● PRINTER RUSH ●
(PTO ASSISTANCE)

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[RUSH] **MESSAGE:** Page 2 of Spec 09-12-03 is missing. Please supply.

Thank you,
MR

[XRUSH] **RESPONSE:**

INITIALS:

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REV 10/04

the aircraft for equipment, subsystem, and cockpit. For aircraft designed for high Mach number cruise, the conventional system uses fuel to cool the engine bleed air instead of using ram air because the ram air total temperature could be high and the ram air inlet increases drag. Significant safety pre-cautions have to be taken to mitigate the catastrophic failure that may occur if fuel leakage comes in contact with high temperature air. The ACS has a lower COP because of the high power required to compress air.

(004) For high-speed flight, hybrid system combining ACS and VCS has been used for ram air drag reduction and fuel heat sink temperature matching. In the prior art, the heat rejection from equipment is first sank into the VCS and then the heat rejection from VCS is transferred by the ACS and then dissipated into fuel and ram air. Because the ACS is inherently low in efficiency and it has to be designed to dissipate the cooling load and the work required by the VCS, there is a weight penalty. However, this approach is used because the VCS is more efficient in producing low temperatures using the phase change property of the refrigerant.

(005) With advent of high power electronics, the cooling loads are greatly increased, which exacerbates the problem. The bleed air that can be extracted from the engine for high speed-high altitude flight is relatively low; otherwise engine performance is significantly reduced. For an ACS, primarily using bleed air, becomes a less attractive solution. In addition, with high-speed cruise at Mach 2+, the aerodynamic heating contributed to the fuel tank temperature increases significantly and the ram air total temperature is high. The system design described herein addressed these issues using unique integration and cooling loads partitioning approach.

(006) Thus, it is a primary object of the invention to provide an environmental control system for an aircraft.